

**MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY**

**SUMMARY ANNUAL REPORT  
July 1, 2008 – June 30, 2009**

**NIOSH TRAINING GRANT  
No. T42 OH 008434**

**SUBMITTED BY:  
SUSAN GOODWIN GERBERICH, PHD, MSPH  
CENTER DIRECTOR  
DIVISION OF ENVIRONMENTAL HEALTH SCIENCES,  
SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MINNESOTA 55455**

**SEPTEMBER 2009**

**MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY (MCOHS)**  
**EDUCATION AND RESEARCH CENTER - UNIVERSITY OF MINNESOTA**  
**July 1, 2008 – June 30, 2009**

**Overview:** The MCOHS continues to be extremely productive in a very supportive environment. There is extensive collaboration among disciplines, involving faculty, staff, students and external stakeholders engaged in teaching, research and outreach. Commitment to enhanced interdisciplinary involvement among the center programs further strengthen this center of excellence (<http://cpheo.sph.umn.edu/mcohs>). The numerous funded active grants (n = 134, including 45 new grants), during the current period that supported student and faculty research, provided multidisciplinary opportunities for research training and dissemination of information through presentations, publications, and research-to-practice (r2p) efforts. There were a minimum of 168 publications, published or in-press peer-reviewed articles (66 [40%], involving one or more students) and at least 202 presentations at local, regional, national, and international meetings (56 [28%], involving one or more students). **There were 57 MCOHS trainees this reporting period (25 MPH, 9 MS, 1 MS/MPH, 22 PhD), including 17 new students and 13 graduates (5 PhD, 2 MS, and 6 MPH).**

**Centerwide Activities:** The MCOHS leadership together with the Executive Committee, Center Advisory Board, faculty, staff and students continued to facilitate the Center's strategic plan. A new method in formative evaluation of students' progress, "E-Portfolios," was presented and implemented on a trial basis in 2008-2009 during a MCOHS ERC seminar on development and assessment of professional competencies in occupational health and safety; further targeted training of students ensued. An important approach to needs assessment of the occupational health and safety workforce was collected from each state in our service region (Minnesota, Wisconsin, North Dakota and South Dakota) during our 2009 spring Center-wide Occupational Health and Safety Research Seminar. The resulting data identify the representative industry sectors, involving very large and small companies, and the associated hazards and potential for adverse outcomes. In particular, the numbers of employees, associated with each of these sectors in the respective states, as well as the projected employment, leaves no doubt as to the importance of each of the MCOHS programs, and the Center, as a whole.

**Interdisciplinary, Outreach, and Research-to-Practice (r2p) Activities:** Numerous outreach activities were carried out during the year; examples included: 1) Efforts to increase interaction with Training Project Grant faculty, University of Wisconsin-Stout, to further enhance continuing education and outreach efforts. 2) The MCOHS Centerwide Seminar Series, led by Dr. Bruce Alexander, has been very successful in providing cutting-edge presentations that attract MCOHS students, faculty, staff, and others from the University, community, and region. 3) The MCOHS convenes a major NORA Symposium each spring that includes research poster presentations by students and faculty; in May 2009, Dr. Christine Branche, former Acting Director of NIOSH, provided the keynote presentation, "National Occupational Research Agenda (NORA) Symposium: Where Are We with Occupational Safety and Health in the United States?" MCOHS research funding provided numerous opportunities for interdisciplinary, outreach, and r2p activities, both regionally and nationally, that are important to health and safety.

**Recruitment and Diversity Efforts:** Among 57 MCOHS registered students, students of color accounted for 30%. Integral to this increase are proactive strategies to ensure an inclusive, welcoming academic and work environment and emphases on both recruitment and retention. Dr. Gerberich, together with assistance from Mr. Rickey Hall, MCOHS Diversity Advisor, and Post-Doctoral Fellow, Dr. Starr Sage, developed a website link for MCOHS and the Environmental Health Sciences (EnHS) division on diversity information and resources that has been instrumental in attracting recent students. The site provides information about on-campus, local, state, and national resources: funding; listservs; academic and social groups; various services; and statistics, among others. The MCOHS Diversity Committee has continued to meet to discuss and implement strategies for increasing program and all-center diversity, in consultation with the Executive Committee. In fall 2008, committee members developed and implemented a major baseline survey of diversity issues for all students, staff, and faculty in the MCOHS and EnHS Division. Subsequently, the University's Office of Equal Opportunity and Affirmative Action experts conducted customized, interactive training and discussion sessions. Periodic surveys will monitor perceptions of students, faculty and staff, pertinent to diversity issues that will, in turn, be utilized as a basis for future interventions, as appropriate. Faculty, students, and alumni continue to recruit locally and nationally at targeted events and major professional meetings.

**Industrial Hygiene (IH) Program: Gurumurthy Ramachandran, PhD, Director (Enrolled students: 6 MPH; 7 MS, 7 PhD; Graduates 1 MS; 1 PhD)** The overarching goal of the IH program is to provide a source of well-qualified, well-rounded professional industrial hygienists to meet the continuing needs of industry and society, both in the region served by the ERC and nationally. This period was very productive for the IH faculty and students in all categories; 23 peer-reviewed articles were published on various occupational health topics and 33 research presentations were delivered at several conferences, including the AIHCE in Toronto, in 2009. Students and faculty received several awards. The IH faculty has been very successful in obtaining external grants from federal, state, and industry sources (a minimum of 15) that provide important opportunities for masters' and doctoral students to conduct research projects and to obtain funding as research assistants. The faculty has also been active in numerous outreach efforts, thus,

increasing the visibility of the IH program as well as the MCOHS, overall. One of the faculty member's RO1 grants from NIOSH led to successful r2p efforts that involve training of IH professionals in improving their exposure assessment accuracy.

**Occupational and Environmental Health Nursing (OEHN) Program: Patricia M. McGovern, PhD, Director (Enrolled students: 6 MPH; 1 MS/MPH; 2 PhD; Graduates: 1 MPH; 1 PhD)** This program continues to provide excellent interdisciplinary education in occupational health and safety for nurses, with the goal of creating a cadre of OEHNs that will work to decrease the nation's burden of occupational illness and injury and protect the health of its workforce. Faculty and students published 17 papers in peer-reviewed journals; 8 are in-press and 11 in review. Over 20 presentations were given to a variety of professional and academic audiences. Faculty accomplishments included: 1) Based on nominations submitted by deans and chancellors, Dr. McGovern was appointed a *University of Minnesota Fellow for the Academic Leadership Program*, through the Committee on Institutional Cooperation for all Big-10 Universities, 2009-2010. This appointment enables enhancement of leadership/managerial skills of faculty who have demonstrated exceptional ability. Dr. Debra Olson was promoted to tenured, full professor and elected to the University of Minnesota *Academy for Excellence in the Scholarship of Teaching and Learning* -- the highest honor bestowed on faculty for innovation and creativity in teaching. Dr. Nancy Nachreiner accepted a role as Study Coordinator/Co-Investigator for the National Children's Study (Dr. McGovern, PI), and is one of six national members serving on the Medical Event Working Team. She was also elected as a Section Councilor to the Injury Control and Emergency Health Services, American Public Health Association. Professor McGovern and Ms. Stedman-Smith, also a student in Agricultural Safety and Health, collaborated with the University of Minnesota's Regional Sustainable Development Partnerships and community partners from the Quinn County, Minnesota's Women, Infant, and Children's (WIC) program, the Fargo North Dakota Immigrant Development Center, and the White Earth Reservation, to implement Photovoice; this qualitative research method was used to assess pesticide exposure of groups of women and caregivers for children in the Red River Valley of Minnesota and North Dakota. The project included designing educational sessions on pesticide exposure pathways and health effects and facilitating participants' efforts to identify prevention and control strategies. Findings led to a proposal for an educational intervention to address pesticide exposure assessment and intervention strategies to be conducted by public health nurses in the region; Ruth Rasmussen (ASH-CE and MCOHS CE Director) is a Co-Principal Investigator. Both projects were awarded funding by Blue Cross Blue Shield Foundation of Minnesota (2008-2010) and other entities. Ms. Stedman-Smith, who received dissertation research funding from the University's Health Disparities Research Program, is now an Assistant Professor at Kent State University, Ohio.

**Occupational and Environmental Medicine (OEM) Program, Fozia Abrar, MD, MPH, Director (Enrolled students: 11 MPH; Graduates: 4 MPH)** The OEM program continues to demonstrate successful achievement of its goal of training physicians to improve the health and safety of workers. This is accomplished among a range of practice venues, including government agencies, corporate health departments, clinical practice and academia. Recent graduate, Dr. Margaret Spartz, is employed in a clinical OEM practice. Two trainees, Drs. Michael Lockheart and Ryan Otten, were recipients of the Occupational Physicians Scholarship Fund Award through the American College of Occupational and Environmental Medicine. Dr. Otten, honored for his exemplary performance, served on the HealthPartners Institute for Medical Education Board of Directors. Trainee Dr. Paul Anderson was selected as a Fellow with the Epidemic Intelligence Service through the Centers for Disease Control and Prevention and is currently working with NIOSH in Alaska. The addition of Dr. Jeffrey Mandel to the faculty has greatly enhanced research efforts within OEM. Dr. Mandel is the PI for two multidisciplinary research efforts involving many other MCOHS faculty and students: 1) an investigation of health issues related to exposures in the taconite mining industry, including potential factors associated with 58 cases of Mesothelioma and a cohort mortality assessment of 72,000 former miners. Through cross-sectional screening, it also involves assessing existing respiratory illness in current and former miners and their spouses (Dr. Greaves, OEM, Co-Investigator). This effort is collaborative with the University of Minnesota Natural Resources Research Institute (NRRI), a geological unit based at the Duluth campus, and the School of Engineering's Particle Technology Laboratory, involving seven MCOHS, School of Public Health and Medical School faculty, numerous staff, three graduate students and five NRRI faculty; 2) an assessment of a reported brain cancer excess within the research facility of a major company which involves a research cohort mortality assessment (Dr. Alexander, Co-PI). The brain cancer investigation is also a multi-disciplinary effort, involving a graduate student and faculty with backgrounds in occupational medicine, epidemiology, industrial hygiene and biostatistics. Program faculty published 11 papers; six additional papers are under review. OEM residents and faculty delivered 96 presentations, including many that involved outreach activities.

**Occupational Health Services Research and Policy Program (OHSRP): Patricia M. McGovern, PhD and Bryan Dowd, PhD, Co-Directors (Enrolled students: 6 PhD; Graduates: 1 PhD)** The Divisions of Environmental Sciences (EHS) and Health Policy and Management (HPM), School of Public Health, offer this joint doctoral-level education program with the goal to prepare doctoral students with expertise in both occupational health and safety, and health services research and policy. Research efforts by faculty and students led to 20 presentations in academic and professional meetings and 31 peer-reviewed publications; additionally, 5 are in-press and 11 in review. Dr. Habermann's dissertation, "Cancer and the Medicare Disabled," resulted in three manuscripts. Upon graduation, she accepted a tenure-track, Assistant Professor position in the Division of Basic and Translational Research, Department of Surgery, University of Minnesota. Faculty and students received several awards: Student Genelle Lamont - *William Randolph Hearst Endowed Scholarship*, School of Public Health (tuition and stipend for 2008-2009). Professor Dowd was re-appointed to a second three-year

term as chair of the Methods Council, AcademyHealth. In 2008-2009, he taped two webinars for the association: "Causality in HSR, Part I: An Introduction to Causal Concepts" and "Causality in HSR, Part II: Estimation Techniques for Causal Modeling." These webinars, explore multidisciplinary perspectives on causal modeling and offer practice advice for estimating causal models in Stata and LIMDEP, and are available to students and faculty worldwide through AcademyHealth. Professor Blewett was elected a member of the Governing Board, AcademyHealth, 2008, and appointed by HHS Secretary LeVitt as a member of the Board of Scientific Counselors, National Center for Health Statistics, CDC, 2007 – Present. Professor Forster was invited as a member of the Tobacco Research Network on Disparities, funded by the National Cancer Institute, American Legacy Foundation, and as a contributing author for the upcoming Surgeon General's Report on Smoking.

**Occupational Injury Prevention Research Training Program (OIP RTP): Susan G Gerberich, PhD and Bruce Alexander, PhD, Co-Directors (Enrolled students: 1 MS(PhD); 7 PhD; Graduates: 2 PhD)** This program rigorously trains doctoral-level academicians and researchers to provide leadership in reducing the burden of occupational injury through teaching, research, and translation of research to practice. The faculty has been funded for numerous research efforts (a minimum of 36) that provide multidisciplinary research-training opportunities for students, resulting in national and international professional presentations (n=72 total; students = 52), publications (n=84 total; students = 46), and R2P efforts. R2P efforts include: 1) Identification of risk factors for work-related physical assault against teachers/educators that are important in application of relevant interventions. Dissemination through peer-reviewed publications and presentations to key professional groups is integral to development of appropriate interventions. Results of Leslie Nordgren's doctoral study ("Etiology and Consequences of Injuries to Veterinary Technicians") are being distributed to Minnesota veterinarians and are being included in the fourth year curriculum for University of Minnesota veterinary students to increase their awareness of risk factors for injury to the veterinary staff. Our research seminars, informal meetings and social interactions, involving OIP RTP students and those from several other MCOHS disciplines, are essential to the camaraderie that facilitates successful progress. Doctoral students, Starr Kelly Sage and Quintin Williams, graduated in August 2008. Awards, included: Dr. Gerberich, *Inaugural Excellence in Advising Award*, School of Public Health; and students Starr Sage, *National Science Foundation Young Investigator Award*, International Society for Research on Aggression, Budapest; Deborah Merchant Langner, *Gerberich Scholarship in Injury Epidemiology and Prevention*; Katherine Schofield, *Safety Memorial Scholarship*, General Contractors of Minnesota; Chia Wei, *Nancy A. Robertson Endowed Graduate Fellowship in Injury Prevention*; Starr Sage and Quintin Williams, *Co-Best Paper Awards*. 2008 Student Paper Competition, American Public Health Association, Injury Control and Emergency Health Services.

**Hazardous Substances Academic Training (HSAT) Program: Peter Raynor, PhD, Director (Enrolled students: 2 MPH; 1 MS; Graduates: 1 MPH; 1 MS)** The HSAT Program faculty and students collaborated on 10 peer-reviewed publications and made 16 research-oriented presentations in a range of venues. Dr. Raynor is a participant in three newly funded research projects, with funding obtained from federal and private sources. MPH student Jessica Ingraham is assisting Dr. Raynor on one of these projects to investigate the potential for nanocomposite plastics to generate harmful nanoparticle aerosols during recycling of the plastic. Dr. Raynor has also helped to develop three online training activities to educate public health workers on chemical hazards, radiological hazards, and the potential hazards posed by a dirty bomb. Dr. Brosseau is Vice-Chair Elect of the American Conference of Governmental Industrial Hygienists (ACGIH) Board of Directors. She has served on committees and made educational presentations to increase the perception of need for proper respiratory protection for those working with hazardous infectious materials. Dr. Brosseau continues a project to measure the ability of different types of packaging to contain mercury vapor from broken fluorescent bulbs as they are shipped for recycling; MS graduate Tracy Glenz has assisted on this project.

**Continuing Education and Outreach (CE) Program, Hazardous Substances Training Continuing Education (HST-CE) and Agricultural Safety and Health Continuing Education (ASH-CE): Ruth Rasmussen, MPH, MS, RN, Director [19 online modules awarding CE credit - accessed by 2,114 participants; 1,171 in-person participants representing OEM, IH, OEHN, and Occupational Safety; TOTAL for 3 Programs, CE, HST-CE, and ASH-CE = 83 courses involving 3,719 participants]** The CE Program includes the HST-CE and ASH-CE programs. HST-CE trainings doubled this year and two new online modules offering continuing education credit were added; the ASH-CE program increased its trainings and numbers of participants by 30% and three new podcasts were made available. The CE Program continued to expand its relationships with the Wisconsin State Association of Occupational Health Nurses and the local chapters of the American Industrial Hygiene Association and the American Society of Safety Engineers by co-sponsoring training opportunities at annual professional development events. Geographically, CE extended to 28 states including Minnesota and regional states of North and South Dakota and Wisconsin, two Canadian provinces, and China.

**Summary:** The Midwest Center for Occupational Health and Safety continues to be highly productive and provides important contributions to the nation's workforce safety and health. Innovative research strengthens visibility of the MCOHS at the regional, national, and international levels and provides a basis for translating research to practice. Excellent quality interdisciplinary academic and research programs, recognized globally, provide a strong foundation for student training and novel continuing professional education and outreach efforts that serve the needs of a diverse workforce in the Midwest.